

PATENT SPECIFICATION

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(54) COSMETIC COMPOSITIONS

- (71) We, HENKEL & CIE, GMBH,
 a German Company, of 67, Henkelstrasse,
 Duesseldorf, 4000, Germany, do hereby
 declare the invention, for which we pray that
 a patent may be granted to us, and the
 method by which it is to be performed, to be
 particularly described in and by the follow-
 ing statement:—
 The invention relates to a composition for
 use in cosmetic preparations, especially cos-
 metical cleansing agents, containing substances
 for replacing the oil in the skin, based on
 esterification products of glycerine-ethylene
 oxide adducts with long-chain fatty acids.
 Cosmetic cleansing agents such as shampoos,
 foam baths, toilet soaps and similar products
 cause a more or less great removal of oil from
 the skin on repeated use. This phenomenon is
 particularly pronounced when the cleansing
 agents are based on synthetic, surface-active
 substances such as alkylbenzene sulphonates,
 fatty alcohol sulphates, olefine sulphonates,
 fatty alcohol ether sulphates and other surface-
 active compounds. Attempts have therefore
 been made to neutralise this removal of oil
 from the skin by replacing the oil by means
 of suitable additions to the cleansing agents.
 Allowance has in such case to be made for
 disadvantages, however, since the products
 generally concerned in replacing the oil in the
 skin have an unfavourable action on the foam-
 ing properties of the cleansing agents and, in
 cosmetic preparations based on alcoholwater
 mixtures, show insufficient solubility.
 The present invention provides a composi-
 tion for use in cosmetic preparation which
 comprises a surface active compound and the
 esterification product of an ethylene oxide
 addition compound produced from glycerine
 and 4 to 20 mol of ethylene oxide per mol of
 glycerine, with a fatty acid of chain length

from 8 to 18 carbon atoms in a ratio of 1 to 2
 mol of fatty acid to 1 mol of glycerine-ethyl-
 ene oxide addition compound as oil replace-
 ment material.

Esterification products of ethylene oxide ad-
 dition compounds produced from glycerine
 and 7 to 15 mol of ethylene oxide per mol of
 glycerine with fatty acids of chain length from
 8 to 18 carbon atoms in a ratio of 1 mol of
 fatty acid to 1 mol of glycerine-ethylene oxide
 addition compound are preferred as the oil
 replacement materials.

The preparation of the ethylene oxide addi-
 tion compound as intermediate product was
 generally effected in known way by reacting
 glycerine with ethylene oxide in the desired
 proportions with alkaline catalysis by means
 of sodium ethylate. For the further treatment,
 the ethylene oxide addition compound obtained
 was reacted in the usual way with a fatty acid
 of chain length from 8 to 18 carbon atoms
 in the molar ratio of 1:1 or 1:2, using iso-
 propyl titanate as esterification catalyst. The
 esterification products obtained were light-
 coloured to yellowish liquids of low viscosity
 with an oil character to lard-like products of a
 faint self colour.

The quantities of oil replacement material
 according to the invention used in the cos-
 metical preparations may vary within very wide
 limits according to the product and its oil-
 removing action, and generally vary from 2 to
 50% by weight, especially 5 to 25% by
 weight. Still higher additions are possible if
 the esterification products according to the
 invention are used at the same time in their
 property as surface-active substances, but in
 most cases this use will be of small advantage.

Oil replacement materials to be used accord-
 ing to the invention include, for example,
 esterification products from

			the adduct of 1 mol of glycerine +	4 mol of ethylene oxide with 1 mol	of coconut fatty acid C_{8-18}
		"	"	+ 6 mol of ethylene oxide with 2 mol	of coconut fatty acid C_{8-18}
5		"	"	+ 7 mol of ethylene oxide with 1 mol	of coconut fatty acid C_{8-18}
		"	"	+ 7 mol of ethylene oxide with 1 mol	of tallow fatty acid
		"	"	+ 8 mol of ethylene oxide with 1 mol	of oleic acid
10		"	"	+ 9 mol of ethylene oxide with 1 mol of	palm kernel fatty acid
		"	"	+ 10 mol of ethylene oxide with 1 mol	of tallow fatty acid
		"	"	+ 10 mol of ethylene oxide with 2 mol	of groundnut oil fatty acid
15		"	"	+ 12 mol of ethylene oxide with 1 mol	of coconut fatty acid C_{8-18}
		"	"	+ 15 mol of ethylene oxide with 1 mol	of palm kernel fatty acid
20		"	"	+ 15 mol of ethylene oxide with 2 mol	of tallow fatty acid

The present invention will be further described by way of illustration with reference to the following examples. Abbreviations and units used in the examples are defined as follows:—

"Acid value" is the number of mg of potassium hydroxide which are needed to neutralize the free esterified fatty acid contained in 1 g of substance;

"Saponification value" is the number of mg of potassium hydroxide which are needed to completely saponify 1 g of ester;

"Hydroxyl number" is the number of mg of potassium hydroxide which are needed to neutralize the acetic acid which is absorbed by 1 g of material. The procedure used is as follows; the substance being investigated is weighed out exactly and is then acetylated by heating with crystalline acetic acid, all the OH groups present thereby being esterified. Subsequently, the acetylated portion of the material is separated by a shaking and washing procedure and the acetylated part is saponified using boiling potassium hydroxide solution. The excess potassium hydroxide which is present after the saponification steps is determined by titration with hydrochloric acid.

"EO" is the ethylene oxide group;

"WAS" is active washing substance.

All parts used throughout the examples are by weight unless otherwise specified.

Examples

The following esterification products were used for the experiments and cosmetic preparations described below.

- (A) (1 mol of glycerine + 7.4 mol of ethylene oxide) with 1 mol of coconut fatty acid C_{8-18}
Acid value 1.0, sap. value 92, hydroxy value 185
- (B) (1 mol glycerine + 7.4 mol of ethylene oxide) with 1 mol of tallow fatty acid
(Acid value 1.1, sap. value 83, hydroxy value 166)
- (C) (1 mol glycerine + 10 mol of ethylene oxide) with 1 mol of tallow fatty acid
Acid value 1.4, sap. value 71, hydroxy value 141

Since for cosmetic cleansing compositions the ability to combine with certain surface-active compounds is of essential importance, mixtures given in the following Table were tested.

TABLE I

Mixing component	Mixture 1	Mixture 2	Mixture 3
(A)	10	—	—
(B)	—	10	—
(C)	—	—	10
Sodium lauryl ether sulphate (2 EO) (27—28% WAS)	50	50	50
Water	40	40	40
Result	Clear homogeneous solution	Clear homogeneous solution	Clear homogeneous solution

In a further experiment the foaming power of a foam bath basic recipe with additions of the individual oil replacement materials was examined.

TABLE II

Components	Mixture 1	Mixture 2	Mixture 3	Mixture 4	Mixture 5
Sodium lauryl ether sulphate (2 EO) (27—28% WAS)	60	60	60	60	60
Sodium lauryl sulphate (over 90% WAS)	5	5	5	5	5
Isopropyl myristate	—	5	—	—	—
(A)	—	—	5	—	—
(B)	—	—	—	5	—
(C)	—	—	—	—	5
Water	35	30	30	30	30
Appearance	clear	turbid deposit formed	clear	clear	clear
Foaming power					
Initial volume in ml 1 minute after beating					
0.5 g/litre	260	170	300	340	240
1.0 g/litre	510	250	490	490	400
2.0 g/litre	660	330	610	640	540
Breaking down of the volume of foam in ml/minute					
0.5 g/litre	2.0	2.5	4.0	4.5	1.5
1.0 g/litre	5.5	3.5	7.0	8.0	4.0
2.0 g/litre	8.0	6.5	9.5	3.0	6.5

5 The foaming power of the individual mix-
tures was measured in the foam-beating
machine according to DIN (Deutsche Indus-
trie Norm) classification No. 53,902, in which
the volume of foam was measured. The figures
for the foam were taken at 45°C in water of
10° German hardness after 30 beats. The
10 measurement was taken 1 minute after the
end of the beating and 21 minutes after the
end of the beating. The breakdown of the
volume of foam was calculated in ml/minute
from the decrease of the volume of foam in

20 minutes. The amounts given in g/litre
relate to the respective mixture.

As may be seen from the above Table, the
foam values of the mixtures containing oil
replacement means according to the invention
are substantially better than when isopropyl
myristate is used as oil replacement materials,
and are scarcely inferior to the figures for a
mixture of pure detergent substances.

A few formulations for cosmetic preparations
containing oil replacement materials according
to the invention are given below.

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Clear Shampoo

Sodium lauryl sulphate (2EO) (27—28% WAS)	40	parts by weight		
Coconut fatty acid diethanolamide	6	"	"	"
Oil replacement means (A)	10	"	"	"
Water	44	"	"	"

Shampoo for dry hair

Sodium lauryl ether sulphate (2 EO) (27—28% WAS)	20	parts by weight		
Sodium lauryl sulphate (90% WAS)	5	"	"	"
Coconut fatty acid diethanolamide	3	"	"	"
Coconut fatty acid monoethanol- amide paste 30%	5	"	"	"
Water-soluble vitamin F	0.5	"	"	"
Oil replacement means (B)	25.0	"	"	"
Water	41.5	"	"	"

Foam bath

Sodium lauryl ether sulphate (2 EO) (27—28% WAS)	30	parts by weight		
Sodium lauryl sulphate (90% WAS)	15	"	"	"
Coconut fatty acid diethanolamide	5	"	"	"
Pine-needle oil	5	"	"	"
Oil replacement means (C)	10	"	"	"
Water	35	"	"	"

Hair wash

Isopropanol	60.0	parts by weight		
Menthol	0.2	"	"	"
Calcium pantothenate	0.05	"	"	"
Vitamin H	0.30	"	"	"
Inositol	0.10	"	"	"
Perfume	0.50	"	"	"
Oil replacement means (C)	5.00	"	"	"
Water	33.85	"	"	"

After-shave lotion

Ethyl alcohol 96%	65.0	parts by weight		
Menthol	0.2	"	"	"
Camphor	0.2	"	"	"
Peruvian balsam	0.1	"	"	"
Perfume	0.5	"	"	"
Glycerine	5.0	"	"	"
Witch hazel extract	10.0	"	"	"
Boric acid	0.5	"	"	"
Oil replacement means (A)	10.0	"	"	"
Water	8.5	"	"	"

Sun tan cream

Colloidally dispersed mixture of 90 parts of cetylstearyl alcohol and 10 parts of sodium lauryl sulphate

2-Octyldodecanol

Groundnut oil

Light-protective means

Oil replacement means (B)

Water

10.0 parts by weight

10 " " "

5 " " "

2 " " "

20 " " "

53 " " "

The oil replacement compositions according to the invention can be used particularly advantageously in cosmetic cleansing means, because they do not exert any appreciable influence on the foaming power of the surface-active products, and because they already have a good solubility in alcohol-water mixtures.

10 WHAT WE CLAIM IS:—

1. A composition, for use in cosmetic preparations, which comprises a surface active compound and the esterification product of an ethylene oxide addition compound produced from glycerine and 4 to 20 mol of ethylene oxide per mol of glycerine with a fatty acid of chain length from 8 to 18 carbon atoms in a ratio of 1 to 2 mol of fatty acid to 1 mol of glycerine-ethylene oxide addition compound as oil replacement material.

2. A composition according to claim 1, in which the ratio of glycerine to ethylene oxide in the addition compound is from 7 to 15 mols

of ethylene oxide per mol of glycerine.

3. A composition according to claim 1 or 2 wherein the fatty acids of chain length from 8 to 18 carbon atoms are in a ratio of 1 mol of fatty acid to 1 mol of the glycerine-ethylene oxide addition compound.

4. A composition according to claims 1 to 3, containing from 2 to 50% by weight of the oil replacement material.

5. A composition according to claim 1 to 4 containing from 5 to 25% by weight of the oil replacement material.

6. A composition according to claim 1 substantially as hereinbefore described with reference to and as illustrated in the foregoing examples.

7. A cosmetic preparation whenever containing a composition as claimed in any one of claims 1 to 6.

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